

ABSTRACT Public health in the United States and Western Europe has long been allied with national security and international commerce. During the 1990s, American virologists and public health experts capitalized on this historical association, arguing that 'emerging diseases' presented a threat to American political and economic interests. This paper investigates these arguments, which I call the 'emerging diseases worldview', and compares it to colonial-era ideologies of medicine and public health. Three points of comparison are emphasized: the mapping of space and relative importance of territoriality; the increasing emphasis on information and commodity exchange networks; and the transition from metaphors of conversion and a 'civilizing mission', to integration and international development. Although colonial and postcolonial ideologies of global health remain deeply intertwined, significant differences are becoming apparent.

Keywords emerging diseases, exchange, information, networks, pharmaceuticals, public health

Security, Disease, Commerce: Ideologies of Postcolonial Global Health

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In April 2000, the Clinton administration, citing domestic political pressure and awareness of an emergent international health threat, formally designated HIV/AIDS a threat to American national security. Earlier that year, a National Intelligence Council (NIC) estimate projected that the disease would reduce human life expectancy in Sub-Saharan Africa by as much as 30 years, and kill as much as a quarter of its population. The report painted a grim picture not only of the future of HIV/AIDS, but of infectious disease in general, a 'nontraditional threat' which it said would 'complicate US and global security over the next 20 years . . . endanger US citizens at home and abroad, threaten US armed forces deployed overseas, and exacerbate social and political instability in key countries and regions in which the United States has significant interests' [Noah & Fidas (2000): n.p.].¹

Described at the time as unprecedented, the announcement in fact codified in language what had long been true in practice. Although often characterized as an humanitarian activity, modern public health as practised in the United States and other Western industrialized nations has long been closely associated with the needs of national security and international commerce. The NIC estimate was part of a decade-long campaign

capitalizing on this historic association. During the 1990s, American scientists, public health officials and defence experts argued that ‘emerging diseases’ presented a threat to American national security, international development and global health. In doing so, they recapitulated the previous century’s dominant logics of international health policy. At the same time, they expressed American anxieties about living in a globalizing world, in which the assumptions and institutions of the Cold War era no longer seemed adequate to the task of ensuring the safety and interests of US citizens.

By examining the American discourse on emerging diseases during the past decade, this paper traces one ideology of international health in the postcolonial era. My aim is twofold: first, to provide a taxonomy of the risks that Western public health experts identified, as well as their recommended interventions against those risks. Second, briefly to outline some of the continuities and discontinuities between this postcolonial vision of international health and colonial understandings of international health that preceded it and, in many respects, provided its intellectual and institutional foundations. For the purposes of this paper, I will use the term ‘postcolonial’ to describe ways of seeing that emerged during an historical moment whose defining characteristics included (but were not limited to) the revolt against the formal colonial order that followed 19th- and 20th-century Euro-American expansion, the end of the Cold War, and the political-economic transformations associated with globalization.²

Background: The Commerce/Security/Disease Nexus

Public health, as conceived of and practised in the United States and Western Europe during the past five centuries, has primarily been a state activity, and as such has been closely connected to the protection of the state’s interests. One of the key functions of public health has been to protect its citizens against threats perceived as having an external origin, particularly infectious diseases carried across national borders. Public health has thus been ‘international’, and closely allied with ideologies of national security and international commerce, since its earliest days.

One of the oldest and most widespread public health strategies, the quarantining of people and goods suspected of harbouring infectious disease, originated in the Port of Venice during the plague epidemics of the 14th century [Cipolla (1981); Markel (1997)]. For the next five centuries, quarantines and sanitary cordons (rings of soldiers around cities to guard against diseased fugitives) were widely used in Western European and some Asian nations. While these measures often came into direct conflict with local economic interests and free-market ideology more generally, during the 18th and 19th centuries mercantilism provided the impetus and, in many cases, the ideological underpinnings, for the creation and extension of public health practices in Western Europe.³

This period also saw the expansion of states’ interests in the health of populations beyond their immediate borders, and thus the birth of a broad

discourse of, and institutions devoted to, international health. During the mid-19th century, epidemics of cholera and plague in Turkey and Egypt led European states with commercial and colonial interests to push for the creation of an international board of sanitary and quarantine control. In 1851, 12 European nations held the first of 14 International Sanitary Conferences, dedicated to standardizing quarantine regulations internationally. These meetings, the last of which was held in 1938, established a template for international cooperation in matters of health. Over the next hundred years, a number of similar congresses and supra-national organizations were established to address international health, including the Pan-American Sanitary Bureau, founded in 1902 by the United States and several Latin American republics; the Red Cross, founded in 1863 to help wounded soldiers of any nation; and the *Office International d'Hygiène Publique*, headquartered in Paris and concerned with collecting and disseminating information on infectious diseases [Roemer (1994)].

While multilateral and non-governmental organizations were still in their infancy, international health issues were most commonly addressed in the context of colonialism, where the practical and ideological needs of the colonizing power governed the ideology of public health. Initially, assuring the health of European soldiers, traders and settlers in hostile climates was the priority, and strategies of avoidance and separation the preferred methods. In time, the focus shifted to the health of indigenous populations, primarily as a means of ensuring the availability of a pool of productive labour. In either case, 'public health' served the interests of colonial powers, with improvements in local health (excepting male members of the labour force) a negligible and secondary side-effect [Arnold (1988a); Arnold (1993); Packard (1989)].

Despite its general disregard for indigenous health and largely futile efforts in combating infectious disease, Western medicine and public health were integral parts of the ideology of empire.⁴ Europeans contrasted their own medicine and public health, symbolizing rationality and modernity, with putatively superstitious and primitive indigenous medical beliefs, which they denigrated and sought to eliminate as part of the larger 'civilizing mission' of colonialism. The medical modernization of native populations, via export of Western medical theories and practices, was part of the 'ideology of colonial healing', that justified colonialism as an ultimately humanitarian endeavour [Comaroff & Comaroff (1992): 222].

The United States followed a pattern similar to Western Europe. Initially, public health measures focused on preventing the importation of infectious disease into the country. Use of isolation and quarantine was widespread during the late 19th and early 20th centuries, a time of significant social and demographic change, urbanization, industrialization, revolutions in transportation, and immigration. As elsewhere, this measure often served as 'a medical rationale to isolate and stigmatize social groups reviled for other reasons', particularly immigrants and racial and ethnic minorities that personified frightening social change [Markel (1997): 4]. Such was the case in 1900, when health authorities, fearing an epidemic of

bubonic plague, cordoned off the Chinatown district of San Francisco; and 25 years later when, in the most famous instance of nativist anxieties determining public health policy, the Irish immigrant Mary Mallon – popularly known as ‘Typhoid Mary’ – was incarcerated for 25 years on a small island near New York City [Kraut (1994): 78–104; Leavitt (1996)].

In the early 20th century, as American businesses sought new markets abroad and the country sought to establish military bases and control trade routes in the Caribbean and Western Pacific, there was increasing pressure for the United States to turn its attention to public health outside its borders. In the first two decades alone, the US Army launched efforts to protect its occupying forces from yellow fever in Cuba, from malaria, dysentery and dengue in the Philippines, and to bring malaria and yellow fever under control in the building of the Panama Canal [Fee (1994): 239–40]. In 1942, US Surgeon General Thomas Parran created the Malaria Control in War Areas (MCWA) division of the Public Health Service to control the disease in army training areas in the Southern United States. During World War II, the MCWA expanded its programmes, and its leaders convinced Parran to make it a permanent agency, the Communicable Disease Center – forerunner of the Centers for Disease Control and Prevention (CDC) [Etheridge (1992): 1–17]. Along with the US Army and the Rockefeller Foundation, the CDC would become the public health institution most responsible for protecting the health of American military and commercial interests abroad.

This admittedly brief overview of the history of public health demonstrates that there is significant precedent for both the ideological connection between humanitarian concerns, national security, and economic gain, and the sedimentation of these connections into the institutions of state public health and international health. In the rest of this paper, I will argue that during the last decade of the 20th century this nexus of security, disease and commerce underwent significant changes. I will focus in particular on a set of documents produced by American scientists, national security experts, and public health officials that address the problem of ‘emerging diseases’. Before making these comparisons, a review of these documents and the discourse that they represent is necessary.

Emergence of a Worldview

On 1 May 1989, the National Institutes of Health and Rockefeller University co-sponsored a conference on ‘emerging viruses’, a term coined by its chair, virologist and immunologist Stephen S. Morse.⁵ Among the more than 200 participants were prominent scientists and public health experts, including Robert E. Shope, Alfred S. Evans, Frank Fenner and Donald Henderson. Morse and his colleague, Nobel prize-winning microbiologist Joshua Lederberg, convened the meeting in order to discuss their concerns about the appearance of new infectious organisms such as the HIV, Ebola, and hantaviruses, and the development of antimicrobial resistant strains of

familiar ones [Morse (1990); Morse (1991); Morse (1992); Lederberg (1988); Lederberg (1993)]. Over the course of the next decade, the anxieties expressed at this conference would be repeated widely by its attendees, eventually hardening into an orthodox set of predictions and recommendations that would later be picked up by a wider group that included other scientists, prominent journalists, local and national public health officials, and, eventually, national security experts.

The *emerging diseases worldview* would quickly come to dominate American understandings of international health. I call this a ‘worldview’ because the consensus that has emerged during the last decade is, in every sense, a view of the world. It is tremendously flexible, allowing a wide variety of actors to adopt it, moulding small parts or emphasizing particular elements and downplaying others to suit their own purposes. It furnishes them with a consistent, self-contained ontology of epidemic disease: its causes and consequences, its patterns and prospects, the constellation of risks that it presents, and the most appropriate methods of preventing and managing those risks. It comes equipped with a moral economy and historical narrative, explaining how and why we find ourselves in the situation that we do now, identifying villains and heroes, ascribing blame for failures and credit for triumphs. Finally, it is a universalizing template for understanding the interactions between humans and the microbial world: the rules and assumptions that it lays out are presumed to be globally applicable.⁶

Three years after the 1989 conference, the National Academy of Science’s Institute of Medicine (IOM) published the most comprehensive and widely-cited statement of the emerging diseases worldview, *Emerging Infections: Microbial Threats to Health in the United States* [Lederberg, Shope & Oaks (1992)]. The IOM report was authored by a distinguished committee of scholars in virology, microbiology and public health, co-chaired by Lederberg and Yale University epidemiologist Robert E. Shope. It argued that Americans were no longer insulated from the diseases that they assumed had been relegated to the developing world:

As the human immunodeficiency virus (HIV) pandemic surely should have taught us, in the context of infectious diseases, there is nowhere in the world from which we are remote and no one from whom we are disconnected. Consequently, some infectious diseases that now affect people in other parts of the world represent potential threats to the United States because of global interdependence, modern transportation, trade, and changing social and cultural patterns. [Lederberg, Shope & Oaks (1992): v]

Defining emerging diseases as ‘clinically distinct conditions whose incidence in humans has increased’ [ibid.: 34], the report noted that rates of infectious diseases worldwide were rising. New diseases were emerging into the human population, and old ones mutating into strains resistant to the drugs that had previously eliminated or contained them.

The report identified several factors responsible for disease emergence, a list which was in many ways a wholesale condemnation of the consequences of modernity. Demographic changes such as migration, urbanization and population growth created new breeding grounds for disease. Wars and economic crises produced immunologically vulnerable refugees. Human behaviours, including sexual activity, substance abuse and war, as well as changes to the natural environment resulting from dam building, deforestation and global warming, altered the vectors along which disease spread. The acceleration of international travel and commerce exposed new populations to diseases once thought to be contained in remote locations. Inadequate sanitation, immunization, and vector control allowed pathogens a new foothold, while their own evolutionary biology gave them the capacity to mutate into new forms and develop resistance to the drugs that once killed them [condensed from Lederberg, Shope & and Oaks (1992): 34–112; see also Morse (1993b)].

To address this risk, the report recommended the expansion and financial support of public health infrastructure in four areas: epidemiological surveillance of outbreaks of infectious diseases and the emergence of antimicrobial resistance; training and basic research in molecular biology and virology; public and private development of vaccines and therapeutic drugs; and the strengthening of and coordination between local, national and international public health institutions.

The IOM report became the centrepiece of a major public health campaign.⁷ It was followed by similar reports from the NIC, CDC, and the Cabinet-level National Science and Technology Council [CDC (1994); CISET (1995)]. In 1995 alone, meetings of the New York Academy of Medicine and the 25th Anniversary Annual Meeting of the IOM were devoted to the topic; the CDC launched the online journal, *Emerging Infectious Diseases*; and the World Health Organization (WHO) established a Division of Emerging and Other Communicable Diseases Surveillance and Control, making prevention and control of emerging diseases a central part of its global strategy [WHO (1996); WHO (2000)]. The following year, at the behest of the editors of the *Western Journal of Medicine*, the *Journal of the Norwegian Medical Association*, and the *Journal of the American Medical Association (JAMA)*, 36 medical journals in 21 countries agreed to devote all or part of their issues to the problem of ‘emerging and re-emerging infectious diseases’.⁸ In one of the lead editorials for this ‘global theme issue’ in *JAMA*, Lederberg captured the growing sense of alarm at the struggle between humans and their microbial adversaries:

We come then to social intelligence as our remaining option to counter the evolutionary drives of the microbial world. That intelligence must include a profound respect for the ecological factors that enhance our vulnerability. . . . From this perspective, we have never been more vulnerable. [Lederberg (1996): 244]

From the start, the emerging diseases campaign enjoyed close ties to the mass media. The original 1989 conference was covered by scientific

weeklies such as *Bioscience*, *Medical World News*, and *Science News*. It also attracted the attention of leading American science journalists, including *The New York Times*' Lawrence K. Altman, and *Newsday*'s Laurie Garrett [Altman (1989); Garrett (1989)]. As the campaign gathered steam during the 1990s, it was aided by their coverage of international outbreaks of exotic infectious diseases, including Ebola haemorrhagic fever in Zaire, pneumonic plague in India, a new strain of avian influenza in Southeast Asia, Bovine Spongiform Encephalopathy (BSE) in Western Europe, and the West Nile Virus in the Northeastern United States.

The contributions of Garrett and science journalist Richard Preston to the emerging diseases campaign were essential. In October 1992, Preston's *New Yorker* magazine article, 'Crisis in the Hot Zone' [Preston (1992)], introduced the American public to the Ebola virus, a previously obscure pathogen. In riveting prose, Preston described an outbreak of Ebola haemorrhagic fever among a shipment of laboratory monkeys at a primate quarantine unit maintained by Hazelton Research Products in late 1989.⁹ Preston concluded his account by noting that the 1992 IOM report considered the Reston episode to be a 'classic example' of disease emergence [Preston (1992): 80].¹⁰ After detailing the report's recommendations, Preston drew explicit connections between Ebola, HIV, and other emerging viruses. Interviewing Morse, Preston asked whether an emerging virus 'could wipe out our species'. Morse responded by speculating on the possibility of an aerosolized form of HIV causing a pandemic of a hybrid 'AIDS-flu':

The human population is genetically diverse, and I have a hard time imagining everyone getting wiped out by a virus. . . . But if one in three people on earth were killed – something like the Black Death in the Middle Ages – the breakdown of social organization could be just as deadly, almost a species-threatening event. [Preston (1992): 81]

Between 1992 and 1993, while a fellow at the Harvard School of Public Health, former National Public Radio and *Newsday* correspondent, Laurie Garrett, was conducting basic research for a proposed book on emerging infectious diseases. Having previously covered the 1976 Swine Flu 'epidemic that never was', as well as the HIV/AIDS pandemic in Africa and the United States, Garrett had long been interested in the science and international politics of infectious disease [Kinsella (1989): 225–41].¹¹ She was also familiar with the Ebola story, having covered possible bans on importation of research monkeys as a result of the Reston outbreak in early 1990 [Garrett (1990a); Garrett (1990b)]. Upon learning that Preston had a contract with Random House, she accelerated work on her book so that it would be released simultaneously. This proved to be a wise decision. In 1994, the publication of *The Coming Plague: Newly Emerging Diseases in a World Out of Balance* [Garrett (1994)] contemporaneously with Preston's *The Hot Zone* [Preston (1994)] gave it an improbably large audience. The two books were often reviewed together, with Garrett's receiving praise as the more substantial work.¹² Garrett and Preston ensured that emerging

diseases remained front-page news throughout the 1990s. In 1999, the *American Scientist* named Morse's *Emerging Viruses* and Preston's *The Hot Zone* as two of the '100 or so Books that Shaped a Century of Science' [Morrison & Morrison (1999)]. By any measure except its own expectations, the emerging diseases worldview had effectively colonized the American imagination of global infectious disease risk.

Determining exactly how and why the emerging diseases worldview had such widespread appeal is beyond the scope of this paper, but one of the most prominent strategies employed by its backers was explicitly to associate infectious diseases with American economic and security interests.¹³ Doing so allowed campaigners to make a case for federal funding not only through traditional health institutions, but also to take advantage of 'trickle down' funding through the Defense Department. This was a shrewd political ploy in an era in which funding for public health had been slashed repeatedly. It also was a recognition that, for the moment, the most sophisticated laboratory and epidemiological surveillance apparatuses were housed in the Defense Department's overseas medical research laboratories [Lederberg, Shope & Oaks (1992): 148–51].

By the latter half of the 1990s, national security experts had begun to respond positively to the campaign to convince them that infectious disease was, as the national intelligence estimate had termed it, a 'nontraditional threat' to American security and economic interests. Two of the most important and emblematic texts of that campaign were Laurie Garrett's 1996 *Foreign Affairs* article, 'The Return of Infectious Disease' [Garrett (1996)], and a 1997 IOM report, *America's Vital Interest in Global Health: Protecting Our People, Enhancing Our Economy, and Advancing Our National Interests* [IOM (1997)]. Together, they established a template for linking humanitarian concern with enlightened self-interest.¹⁴

America's Vital Interest in Global Health was authored by a group of distinguished representatives (three of whom, including the co-chair, were among the authors of the IOM report on emerging infections), from American universities, Federal agencies and non-governmental organizations, and funded by the IOM, the Carnegie Corporation, the Rockefeller Foundation, and the National Institute for Environmental Health Sciences.¹⁵ While following the previous IOM report's elucidation of the risk of emerging diseases closely, this report was notable for its invocation of global interconnectedness. It argued that since 'distinctions between domestic and international health problems are losing their usefulness and often are misleading', the American polity should be concerned with 'global health', which it defined as 'health problems, issues, and concerns that transcend national boundaries, may be influenced by circumstances or experiences in other countries, and are best addressed by cooperative actions and solutions' [IOM (1997): 1, 11]. The report painted a compelling picture of global risk and response:

As populations throughout the world live longer, there is an increasing trend toward global commonality of health concerns. This trend mirrors a growing demand for health and access to new interventions to prevent,

diagnose, and treat disease. The knowledge base required to meet these needs is not only of a technical kind, deriving from experiments of researchers, but must also draw from the experiences of governments in allocating resources effectively and efficiently to improve human health . . . America has a vital interest and direct stake in the health of people around the globe, and . . . this interest derives from both America's long and enduring tradition of humanitarian concern and compelling reasons of enlightened self-interest. Our considered involvement can serve to protect our citizens, enhance our economy, and advance US interests abroad . . . America must engage in the fight for global health from its strongest basis: its pre-eminence in science and technology. US expertise in science and technology and its strength in biomedical, clinical, and health services research and development are the engine that has helped power many of the advances in human health and well-being of this century. [IOM (1997): v-vi]

For the rest of this paper, I would like to draw some comparisons between the emerging diseases worldview, as represented by *America's Vital Interest* and selected other documents, and ideologies of international health during the colonial era. I should stress here that in making this comparison, I do not intend to establish clear dichotomies or rigid periodizations. Instead, I hope to map out some changes that characterize the last decade, and will likely play a rôle in the immediate future. I should also stress that these ideologies are neither uncontested nor infinitely negotiable. The emerging diseases worldview, like its colonial predecessors, is merely one local vision of international health emanating from the Eastern United States; in practice, it will likely be deconstructed, contested, negotiated and resisted in numerous settings. Nevertheless, for the time being, it has garnered an impressive array of adherents, and to date there have been few public critiques or contrary voices.¹⁶ For these reasons I think it is useful to map out its contours, and to inquire into its relationship to the largely discredited discursive regime that came before it.

Territories and Networks (1):

Information

Comparing the colonial rhetoric of public health with the emerging diseases worldview reveals a change in the way that Americans conceptualize space in international health. Historian Charles Maier has argued that the twentieth century was characterized by the 'emergence, ascendancy, and subsequent crisis' of 'territoriality', which he defines as

. . . a bounded geographical space that provides a basis for material resources, political power, and common allegiance . . . [and] assures a stable sense of community only when 'identity space' – the unit that provides the geography of allegiance – is congruent with 'decision space' – the turf that seems to assure physical, economic, and cultural security. [Maier (2000): 816]

Beginning in the 1860s, and facilitated by dramatic developments in transportation and communication, European political entities tried to

create administratively cohesive and geographically bounded regimes. Gripped by an ‘episteme of separation’, ‘no culture obsessed more about borders than the one taking shape in the mid-nineteenth century, insisting on national, racial, gender, and class lines’ [Maier (2000): 819]. This was true not only at home but also abroad: the colonial project was not only an attempt to establish a political network, but also to export a vision of bounded geographic space worldwide.

Maier argues that this obsessive project, which was global in scope and fundamental to all of the political and economic transformations of the 20th century, began to dissolve in the 1960s. This dissolution was driven by political events (most notably the American retreat from financing the Bretton Woods monetary regime, and the collapse of state socialism and planned economies) that rendered territorial cohesion unimaginable; and by technological developments (the replacement of industrial by information technologies) that rendered it irrelevant as a resource. The end result was that ‘the major political division of our times [is] one that separates those who envisage their future prospects based in non-territorial markets or exchange of ideas from those who insist that territoriality can be reinvigorated once again as the basis for economic and political security’ [Maier (2000): 824].

One could scarcely find a better rendering of the twin impulses contained in the emerging diseases worldview, and of its continuities with and discontinuities from the regime of colonial public health. Colonial-era public health was similarly marked by an obsession with exporting the European ideology of territoriality, even if in practice this ideal was seldom achieved. Western medical theories identified particular places (under miasmatic theory) or populations (under germ theory) as sources or reservoirs of infection. Unhealthy (non-Western) places or populations posed a threat to healthy (Western) individuals when the borders between them were transgressed, either by colonials in foreign lands, or by immigrants contaminating home countries. It relied on strategies of avoidance, segregation and establishment of sanitary cordons in order to preserve territorial boundaries, isolating populations from one another either through control of borders (to guard against immigrant carriers) or control of populations in colonized territories (to guard against the contamination of colonial interlopers) [Anderson (1995); Iletto (1988)]. Like their European colleagues, American public health officials attempted to create what Warwick Anderson has called ‘utopian medical micro-colonies’ – isolated spaces in the colonial ‘periphery’ that mimicked the social and spatial relations at the metropolitan ‘centre’ [Anderson (2002)].

The emerging diseases worldview, worried that ‘centres’ might be contaminated by ‘peripheries’, preserves this ideal of territoriality while simultaneously seizing on de-territorialization as a response. On the one hand, it recreates the representational strategies of 19th- and early 20th-century public health, identifying particular nations as threatening reservoirs of infection. The NIC report, for example, identifies the ‘growing ease and frequency of cross-border movements of people and produce’ as

one of the crucial ‘mechanisms of entry’ of pathogens into the United States. It also preserves the ideal that, through strategies of separation and containment, the United States and its allies can be biomedically insulated from those countries – the postcolonial economic periphery of ‘developing nations’ – identified as the source of potential and actual global pandemics such as HIV/AIDS, tuberculosis, West Nile Virus, Ebola and dengue [Noah & Fidas (2000): n.p.]. The obsession with boundaries – between races, between classes, and between nation-states – persists, as does the origin narrative that locates the ultimate source, or ‘reservoir’, of disease in other nations. This was illustrated during the 1990s by American fascination with two pathogens named after the African regions in which they were first discovered, the Ebola and West Nile viruses, despite relatively few cases in the United States.¹⁷

Alongside this pre-occupation with boundaries is a second set of anxieties and solutions, envisioning a world in which the security of territorial borders has faded, to be replaced by one in which vast networks are not only conduits of infection but also prophylactic tools. The emerging diseases worldview identifies globalization as an irrepressible source of geographic transgression, rendering the ideal of territoriality moot. As Garrett notes in her *Foreign Affairs* article, ‘geographic sequestration was crucial in all postwar health planning, but diseases can no longer be expected to remain in their country or region of origin’ [Garrett (1996): 69]. Recognizing that physical sanitary cordons are impossible in a putatively borderless world, the emerging diseases worldview idealizes ‘informational cordons’, which would identify and manage risks before they become epidemics that threaten American citizens and interests. The 2001 CDC report thus argues that ‘increased international engagement has stimulated CDC to rethink its infectious disease priorities, keeping in mind that it is far more effective to help other countries control or prevent dangerous diseases at their source than try to prevent their importation’ [CDC (2001): 5; see also WHO (2000): 3].

Replacing the utopian medical micro-colony is an ideal of a utopian biomedical macro-colony, in which global surveillance networks allow risks to be identified and managed quickly and efficiently. While colonial anxiety revolved around fears of contamination as certain (white, European, male) bodies moved into vulnerable places and faced novel contaminating environments and (non-white, non-European, female) peoples, postcolonial anxiety revolves around the contamination of space itself by mobile bodies and motile environments. This is not the horror of matter (or bodies) out of place, which presupposed the identification of a place for matter; instead, it is the horror of places no longer mattering, of a ‘third-worlding’ at home.¹⁸ As the CDC’s 2001 report, *Protecting the Nation’s Health in an Era of Globalization* puts it, the appearance of dengue in Texas and malaria in New York during the late 1990s illustrated American vulnerability to diseases of the poor, but also ‘reminds us that millions of people live in tropical areas where mosquitoborne [*sic*] diseases like malaria and dengue are a fact of everyday life’ [CDC (2001): 11].

America's Vital Interest identifies several areas in which American scientific expertise could be deployed in the service of international health: surveillance and information management, biomedical and biotechnological research, and the development and dissemination of pharmaceutical products. Central to each of these projects is the use of American technoscience in the establishment of global networks of information and exchange. 'International' projects, conducted through treaties between and cooperation among sovereign states, would be replaced by 'global' projects, conducted by coalitions of public, private and non-governmental organizations. These coalitions would erect vast communications networks in which epidemiological information could be gathered, standardized, manipulated, interpreted, managed and archived.

America's Vital Interest also identifies the production of verifiable information regarding disease outbreaks as a fundamental prerequisite to the attainment of global health. To this end, the report recommends the institution of a global surveillance network to detect, track and intervene against outbreaks of disease around the world. This network would allow for the rapid identification of local outbreaks of disease, ensuring that no incursion of microbes into the human population would go unnoticed. This would provide the basis for the rapid deployment of flexible teams of biomedical experts from American institutions – including the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), and the US military – who would be available to provide diagnoses, treat patients, and assist in measures to contain and prevent the spread of the disease. In addition, clinical materials could be collected on site and rapidly circulated among experts in the public and private sectors, in order to characterize the specific pathogens and develop diagnostic and therapeutic tools to combat them. The report notes that, since the information technology necessary to implement a global surveillance network is both complex and expensive,

... a special challenge is how to help developing countries to advance their capacities in fields of information and communications. The United States, particularly the corporate sector, has much to offer in this enterprise. To foster such involvement, the US government, along with its counterparts throughout the world, must ensure that the regulatory, legislative, and market conditions necessary to attract private investment in telecommunications, information technology, and information services are in place. [IOM (1997): 31]

Information management would not be limited to the identification of specific disease outbreaks. As the IOM report notes, the development of effective vaccines and therapeutics depends upon efficiently and comprehensively gathering and managing data from clinical trials. Thus, it is essential that sites in which knowledge is produced be multiplied globally, and conduits for the transmission of that knowledge from the developing world (which was assumed to be the location in which most such outbreaks would occur) to the developed world be opened and maintained:

Medical research into the control of infectious diseases is often not possible without collaboration between nations. Many potentially threatening diseases, such as malaria and cholera, must be studied abroad among populations in which the diseases are common. In the United States, trials of vaccines and drugs against such diseases would not be statistically feasible, even though US citizens have much to gain from resulting products. Tests of new drugs and vaccines can also be undertaken most cost-effectively in populations in which disease rates are high . . . in order to maintain the necessary flow of knowledge to prevent diseases and save money, the USA must continue to invest in research collaboration with its partners abroad. [IOM (1997): 32]

In the emerging diseases worldview, American institutions would be both the natural leaders and the most prominent beneficiaries of the creation of a global surveillance network.¹⁹ Thus the CDC plan – which, citing *America's Vital Interest*, argues that 'promoting international cooperation to address emerging infectious diseases is a natural role for the United States, whose scientists and business leaders are important members of the biomedical research and telecommunications communities that provide the technical and scientific underpinning for infectious disease surveillance and control' [CDC (2001): 16] – identifies the improvement of laboratory diagnostic facilities and surveillance networks as its first two priority areas. Its stated objective is to replace *ad-hoc* outbreak investigation with a formal, standardized virtual network of data collection and analysis. The CDC would be the source of the technology, standards and expertise, creating the computer models and risk-analysis software, furnishing regional laboratories with 'state of the art' diagnostics, and training foreign personnel through a series of International Emerging Infections Programmes in developing nations. In return, American researchers would gather information from abroad not only on nascent epidemics, but also more broadly on the natural history of infectious disease.

In the postcolonial vision of global health, then, risks could no longer be prevented through the preservation of territoriality. Instead, they could be managed in the de-territorialized networks in which information is collected, managed, assembled and disseminated. The familiar techniques of medical observation are multiplied globally, and the monitoring of individual bodies in specific places augmented (and perhaps replaced?) by the surveillance of the global population in the de-territorialized space of informatics, telemedicine, databases and the internet.

To be sure, information management in public health is hardly a novel phenomenon, as targeted surveillance of specific populations and collection of epidemiological information have long been important aspects of public health practice [Coleman (1987)]. In an earlier era, information collection was a reactive and specific measure, carried out in response to specific outbreaks or targeted at particular populations, especially the urban poor. In the emerging diseases worldview, surveillance is expanded from specific local activities of set duration into an unlimited, unending, examination of the global population, whose goal is the detection of abnormal distributions of epidemics of infectious disease before they

become publicly visible outbreaks.²⁰ In contrast to the panoptic institutional surveillance of a single prison or the clinic, which is easily identified as coercive or violent, this surveillance is imagined to be everywhere, at all times, producing data available to everyone: a global clinic.

Territories and Networks (2):

Exchange

In the emerging diseases worldview, the production and management of information would be complemented by a global system that ensured the efficient production, distribution and consumption of biomedical products, particularly vaccines and other pharmaceuticals. International control of infectious diseases had traditionally focused on vector control – that is, intervening in the transmission of pathogens between humans and non-humans. While this is still a part of the emerging diseases worldview, it is overshadowed by the assumption that, in the future, ‘control’ of infectious disease will be achieved through worldwide consumption of biomedical technology.

America’s Vital Interest portrays the protection of global health as synonymous with American economic growth, but identifies several obstacles to the smooth functioning of the global business of biomedicine. Because of staggering global inequities in the ability to invest and engage in their production, ‘for the foreseeable future, the introduction of new drugs and vaccines in developing countries will be dependent on the pharmaceutical and vaccine industries in the United States and other industrial countries’ [IOM (1997): 36]. The international market for pharmaceuticals is bifurcated, with multinational pharmaceutical companies and industrial producers in the USA and Europe (which produces 75 percent of all drugs exported to developing nations) required ‘to pursue growth in emerging markets as aggressively as possible’ [ibid.: 36]. However, these companies have few incentives to develop commodities for markets whose relative purchasing power in the global economy is negligible. They are also faced with uneven regulation and adherence to international conventions regarding intellectual property rights and piracy.

For these reasons, global health is dependent upon the ability ‘to make it economically feasible for the best of American science, technology, and industry to address major global health problems and enable US industry to profit, rather than suffer losses, by that engagement’ [IOM (1997): 36].²¹ The IOM report recommends several strategies. The institution of multi-tiered pricing schemes would allow poor countries to purchase vaccines at close to marginal production costs, while simultaneously enabling manufacturers to exploit economies of scale. The acceleration of international synchronization of regulatory standards regarding safety, quality control, intellectual property and piracy would assure pharmaceutical manufacturers of well-ordered markets for their products – and would forestall growing controversies over intellectual property rights and the production of generic drugs by non-Western nations [Noah & Fidas

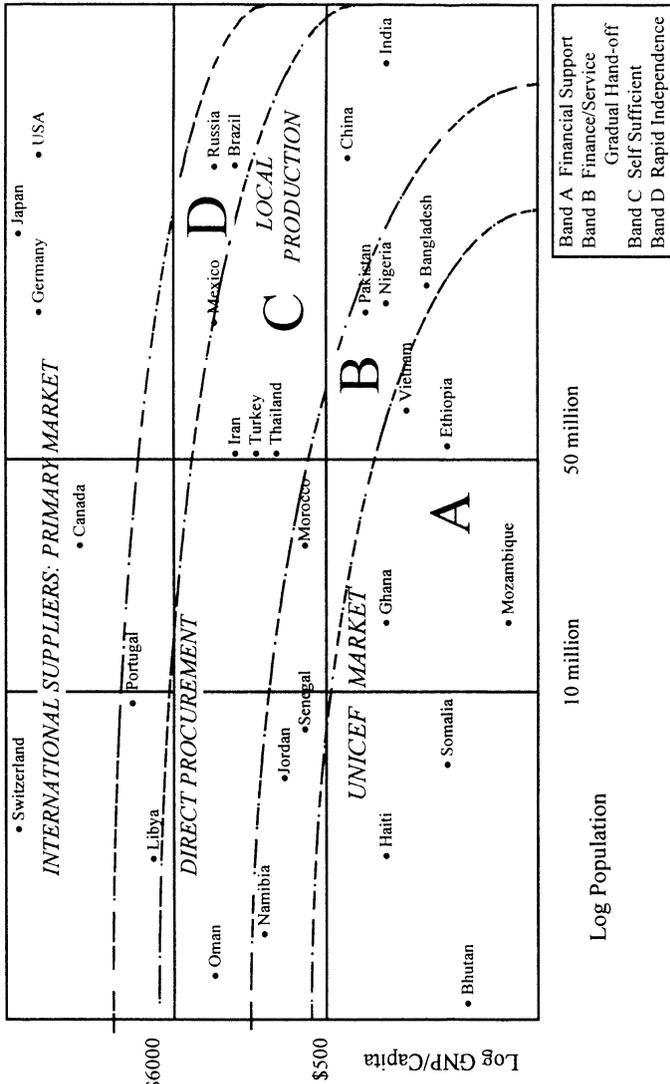
(2000): n.p.]. Finally, the education and training of health professionals from developing nations in the methods of Western biomedical science 'would provide opportunities for US medical products and technologies to enter the overseas markets' [IOM (1997): 45].

The integration of global public health with the international pharmaceutical industry illustrates a second way in which the idealized rhetoric of the network – in this case, global networks of commodity exchange – is a central component of the emerging diseases worldview. In this view, health interventions take place in those real and virtual places where medical goods and services are exchanged between individuals, groups, institutions and organizations. Such places include the sites where drugs and other medical technologies are bought and sold, either individually or in bulk form; the virtual sites of international markets, where resources are invested, prices negotiated and determined, and futures traded; and the global media, where human suffering is transformed into and exchanged as a commodity.

It is instructive to look at one graphic representation of the space envisioned in this imaginary. Figure 1, reproduced from the IOM report *Orphans and Incentives* [Harrison & Lederberg (1997): 12], illustrates a market segmentation strategy initiated by the Children's Vaccine Initiative (CVI) to encourage the development of new pharmaceutical products to address infectious diseases in developing nations.²² While the 1980s witnessed an explosion in vaccine research and development, driven in part by revolutions in the molecular sciences and biotechnology, the target markets for these products were limited primarily to the industrialized nations of North America and Western Europe. As this report notes, two of the most significant disincentives to pharmaceutical development concern the irregularity and unpredictability of the market for vaccines and therapeutics. Demand for pharmaceutical products is notoriously unpredictable, especially with regard to epidemic diseases. Because of the lengthy time and expense involved, manufacturers are loath to invest in development of a product whose demand cannot be assured.²³ In addition, even if a reasonably large market in terms of population can be assured (as, for example, it can be for diseases such as malaria and tuberculosis), those most likely to suffer from infectious diseases tend to have little social or economic capital, and thus form an unappealing customer base.

To address these issues – or, as the IOM report puts it, 'to bolster the competitiveness of such public health products in industrial portfolios' – the CVI adopted several strategies [Harrison & Lederberg (1997): 2]. Along with using management consultants to analyse the relevant markets and working towards the protection of intellectual property and patent rights, they devised a plan to ensure that the global marketplace for particular medical products would be stable and attractive. As the IOM report noted, this consisted of 'early interventions to make a given market more attractive to investment, in effect creating that market by limiting demand uncertainties and generating appealing economies of scale' [ibid.: 35]. Under this strategy, countries are grouped according to ability to pay

FIGURE 1
A Global Targeting Strategy for Sustainable Vaccine Supply



The Figure represents a global targeting strategy for sustainable vaccine supply, as defined by Bands A-D, and market segmentation and tiered vaccine prices according to the primary market of international suppliers, direct procurement, local production and the UNICEF market.
 Source: Harrison & Lederberg (1997): 12. Reprinted with permission.

for pharmaceutical products – in this case, vaccines whose demand fluctuates between different geographic regions. Each group is then charged a different rate for pharmaceutical products, in order to efficiently share the risks and benefits of the unpredictable vaccine market.

The ideology of colonial public health was characterized in part by its preoccupation with the transmission of medical knowledge between nation-states. Initially, historians of colonial medicine examined the multiple ways in which Western medical theories and public health practices functioned in a colonial context as ‘tools of empire’ with which to subjugate local populations. Others have studied the modes in which Western biomedicine was reconfigured or resisted in colonial contexts. More recently, some have begun to question the veracity of analyses that rely upon a model in which knowledge is diffused from a (Western) ‘centre’ to a (non-Western) ‘periphery’.²⁴

The emerging diseases worldview differs from the colonial in that it is relatively unconcerned with the diffusion of knowledge from centre to periphery, and rather more concerned with efficiently managing the global circulation of medical products. Figure 1 presents a world marked less by the geography of place, than by the integration of locations into a global marketplace: not just a global clinic, but a global HMO.

Connections between commodity exchange and international health are by no means historically novel. However, the emerging diseases worldview’s emphasis on innovative production, efficient distribution, and global consumption of pharmaceuticals is significant as a distinctively *colonial* operation. Partaking in a sustained American faith in technological fixes – and in contrast to the rhetoric of previous ‘global’ health strategies such as the famous (if ineffectual) Alma-Ata declaration of 1978 – it forecloses the consideration of social or structural remedies to international health problems.²⁵ Instead, it establishes a framework in which participation in global public health is conducted upon a terrain already colonized by market relations and the logic of exchange.²⁶

In the emerging diseases worldview, participation in the global exchange of medical commodities is incumbent upon adherence to international standards regarding regulation, pricing, piracy and intellectual property. While the specific content of these standards might generate controversy – as it has in recent controversies over pricing of HIV/AIDS drugs and production of generics in South Africa, India and Brazil – the prerequisite of standardization is already mapped out ahead of time. Where colonialists anticipated eventual victory in the international conflict between competing medical systems, the emerging diseases worldview idealizes a smooth terrain of global capitalist exchange.²⁷

From ‘Civilizing Mission’ to International Development

This idealization of exchange networks is part of a larger discourse on the integration of developing nations into world markets. It also provides a final point of comparison regarding discourses of humanitarianism in

colonialist ideology and the emerging diseases worldview. Scholarly analyses of public health in colonial contexts have for the most part focused on the encounter between cultures with different medical epistemologies or health belief systems. European and American colonialists imagined themselves to be part of a great struggle between rational Western biomedicine and primitive traditional therapeutics. In their imaginary, colonial public health was part of a larger ‘civilizing mission’, in which modern medical science would drive out primitive traditional therapeutics, freeing backward societies from the grip of irrationality and legitimating colonialism as an ultimately humanitarian project.

Revisionist work in the history of colonial medicine has modified this narrative. First, it has critiqued this ideology of colonial healing by exposing the violence at the heart of the ‘civilizing mission’, arguing that this putatively humanitarian enlightenment involved an oppressive and often brutal erasure of indigenous healing practices in an attempt to discipline local populations. Second, it has critiqued the binary logic in which an internally consistent ‘Western medicine’ confronts a homogenous set of ‘traditional’ beliefs and practices, preferring instead to investigate the co-production of medicine and colonialism [Anderson (1998)].²⁸ Finally, recent work has identified colonial public health as the site of a complicated negotiation, often resulting in a novel hybrid of different medical theories and practices [Lyons (1992); Cunningham & Andrews (1997)].

What these analyses share in common is the assumption that the colonial situation is above all a scene of combat and negotiation between actors with incommensurable *epistemological differences*. Whatever one’s view of the authenticity or consistency of the ‘civilizing mission’, there seems to be broad agreement that the colonial situation was most profoundly marked by the encounter between different cultures with different medical theories, practices and belief systems.

By contrast, the emerging diseases worldview envisions a situation marked not so much by conflicts over or negotiations between incommensurably different epistemologies or belief systems, but rather by more mundane disagreements over the relative place of stakeholders in global exchange networks. The ideology of the civilizing mission is being replaced by one of international development; the goal is no longer to bring modern Western medicine to primitive cultures, but rather to furnish them with Western medical technologies in an effort to foster the integration of underdeveloped nations into the world capitalist economy [Anderson (2000): 235].

The emerging diseases worldview shares much in common with the broader discourse of international development that emerged in the post-World War II period. Both emphasize the need for training a professional class in Western disciplines – epidemiology and laboratory science in the former, economics in the latter – in order to produce knowledge about the developing world and serve as the basis for humanitarian interventions. Both consider the modernization and integration of non-Westerners into

the world economy to be the most efficient vehicle for improvements in quality of life [Escobar (1988): 430–32].

Ironically, this worldview has been promoted as a corrective to the causal logic favoured by the Bretton Woods institutions during the Cold War. International development organizations have long assumed that improved health naturally follows economic modernization, and have thus prioritized investment in industrial and agricultural production [Garrett (1996): 69–71]. However, in its 1993 World Development Report, the World Bank argued that ‘spending on health can be justified on purely economic grounds’. Identifying poor health as an obstacle to economic development, it recommended three strategies to simultaneously produce better health and economic development: implementing policies that encourage income gains among the poor, including expanded investment in education; redirection of government spending from specialized clinical care to basic public health activities such as immunization, nutrition and control of infectious diseases; and promoting cost-effective provision of care and competition among health service providers [World Bank (1993): 17].

Citing the growing ‘financial and intellectual’ influence of the World Bank (whose 1996 loans for health were twice as large as WHO’s total budget for that year), *America’s Vital Interest* similarly identifies poor health with economic underdevelopment, political instability and global insecurity [IOM (1997): 42–43]. Other reports cite a ‘negative synergy’ between health and development, in which infectious diseases contribute to labour shortages, absenteeism, trade disruptions, reduced GNP, and the redirection of resources from spending on education, infrastructure and other social programmes, leading eventually to political and economic instability [Noah & Fidas (2000); Moodie & Taylor (2000)].

Western investment in global health is thus justified by the need to foster continued economic development and modernization. In the context of globalization, these concerns are smoothly interwoven with American economic interests and national security. One report commissioned by the Council on Foreign Relations and Milbank Memorial Fund argued that ‘defensive imperialism’ is necessary because ‘in an increasingly interdependent global economy, there is the potential for damage or stagnation to US economic interests where ill health and other falling social indicators condemn a country or region to the “poverty trap” of high fertility and high mortality’ [Kassalow (2001): n.p].

To be sure, this emphasis on development is hardly novel, and indicates the persistence of a colonial ‘transition narrative’ whose assumed end-point is the modernization of non-Western states [Chakrabarty (1992): 4–8]. Yet the absence of questions of culture and health belief systems is striking. The emerging diseases worldview is silent in these matters, assuming that the conflict between ‘Western’ and ‘traditional’ health systems is either over (with the former as victor), or is wholly irrelevant to the project of global public health.

Conclusion: Conversion and Integration

Let me again stress that my reason for sketching out this particular postcolonial vision is not to suggest that colonial agendas, strategies or practices are dead.²⁹ Colonial and postcolonial ideologies are coincident and deeply entangled. My goal is instead to suggest that the objects of postcolonial criticism – most notably the obsessive binarization of colonial logic – are being joined, and perhaps superseded, by a form of power that is pluralist in its rhetoric, integrative in its ambitions, and just as easily interwoven with the concerns of American national security and global economic dominance [Hardt & Negri (2000): 137–46].³⁰

Colonialism's goal is *conversion*: of indigenous medical belief systems and practices into biomedical science, and more generally of 'primitive' into 'modern' ways of knowing and doing. The postcolonial agenda has *integration* as its goal and its dominant metaphor. The universality of biomedical ways of knowing and doing is taken for granted, and achieving 'global health' depends upon integrating localities into global networks of commodity and information exchange. Local populations present obstacles not because of incommensurate belief systems or cultural differences, but because of incomplete integration into the modern projects of total surveillance and seamless exchange.

The language of integration, networks and exchange is attractive, particularly in the context of an ideology that places such importance on international development, because it seems far more egalitarian than that of conversion. In fact, the projects of conversion and integration are mutually reinforcing. Information and commodity-exchange networks are a means by which conversion is achieved in practice, almost as a by-product. In the logic of networking, it is not necessary to effect, by violence or by argument, the transformation of another's culture or worldview. It is necessary only to enlist them in a series of specific exchanges: produce these data, learn these skills, consume these drugs. Each exchange is small, but serves as a means of enlistment into larger networks, and ultimately into a universalizing project [Latour (1993)]. Moreover, as Saskia Sassen (1991) has shown, networks are fundamentally inegalitarian arenas: some nodes are more important or central than others, and some local points benefit more from their operation than do others.

The network ideal also appears to circumvent criticisms of Western medical parochialism. Anderson [(1998): 523] has disapprovingly noted that current scholarship represents not a postcolonial history of medicine, but 'a disciplinary enclave of implicitly nationalist historians of medicine ... [who] are more likely to ask what is distinctive about Western medicine in a particular colonial, or protonational, setting than to look for what is colonial about Western medicine in any setting'. Eschewing questions of whether particular medical theories or practices are 'Western' or not, the emerging diseases worldview appears to sever the ties between 'Western medicine' and colonialism. What is 'colonial' about the emerging diseases worldview is not (or is not any longer) its distinctive epistemology,

but rather its alliance with the networking impulse of Western modernity [Giddens (1990)]. This postcolonial imaginary is characterized not so much by the overt export of medical *theories* (though this does doubtlessly occur as a matter of course), but rather by the integration of localities into the global circulation of information and commodities.

If, as I have argued, expressions of power in the postcolonial era are both continuous and discontinuous with those in the colonial era, this raises a question for the anthropology of resistance. If the emerging diseases worldview has set up particular agents and agencies – the provider of information, the consumer of pharmaceutical products, the healthy, modern, productive participant in the globalized economy – then what forms might resistance to these agents and agencies take? Recent studies of colonial-era medicine and public health have reviewed the varied forms that resistance to religious and epistemological conversion has taken. Henceforth, we might be attuned to the forms of resistance available under a different mode of colonization: not the singular conversion of souls or ideals, but the unremitting conversion of universal exchange.

Notes

The author would like to thank members of the Harvard University History of Medicine Working Group, Warwick Anderson, three anonymous referees, and the Editors of this special issue for their help.

1. This (unpaginated) report, issued as a National Intelligence Estimate, was commissioned by the US Department of State and National Security Council, and prepared by Lt Col Don Noah of the Armed Forces Medical Intelligence Center and George Fidas of the National Intelligence Council. On the Clinton announcement, see Gellman (2000).
2. Throughout this paper, I use the hyphenated version of the term ‘postcolonial’ to signify a particular periodization (after the retreat of the colonial geopolitical order), and to distinguish it from that body of theoretical literature that falls under the rubric of ‘postcolonial theory’ or ‘postcolonial criticism’. I do not wish to claim that we are ‘postcolonial’ in the terms that these theorists understand, but to make rather more prosaic observations regarding the ideology of international health in the aftermath of the demise of the colonial order. For the relationship between globalization and the postcolonial, see: During (1998); Moore-Gilbert (1998); and Dirlík (1994).
3. But also note that valuation of unfettered free markets could also present an obstacle to public health measures [Porter (1994a): 5–8].
4. Notable exceptions to this futility were the use of quinine prophylaxis and vaccination for smallpox.
5. The conference, ‘Emerging Viruses: The Evolution of Viruses and Viral Disease’, was held under the auspices of the NIH’s Fogarty International Center and the Division of Microbiology and Infectious Diseases of the National Institute of Allergy and Infectious Diseases. Details can be found in Henig (1993): 12–20; Garrett (1994): 5–6; and Morse (1993a).
6. This universalizing tendency was established by some of Morse’s earliest publications on the matter, in which he outlined the general evolutionary biology and epidemiology of viruses, which he termed ‘rules of viral traffic’ [Morse (1990); Morse (1991)]. It was established figuratively by popularizers of the worldview such as Laurie Garrett and Richard Preston, each of whose work featured extended metaphors of comparing global ecology to an individual organism’s immune system [Garrett (1994); Preston (1994)].

7. In an interview published in April 2001, James Hughes, Director of the CDC's National Center for Infectious Diseases (NCID), stated that the 'classic' IOM report had 'helped shape the first CDC emerging infections plan': McCarthy (2001).
8. A list of the participating journals and their countries of origin can be found on page 246 of the 17 January 1996 issue of the *Journal of the American Medical Association*.
9. Four humans developed antibodies to the virus but did not present any symptoms of Ebola haemorrhagic fever: Preston (1992).
10. In his foreword to Morse's edited collection [Morse (1993c)], Richard M. Krause [(1993): xviii] invokes Ebola alongside Swine Flu as localized outbreaks that failed to spread globally.
11. Background information on Garrett can be found in Kinsella (1989). Kinsella, otherwise ferociously critical of media coverage of HIV/AIDS, singles out Garrett's 'extraordinary reporting on AIDS in America's own third world' as 'a model of how a journalist can be touched by a story, yet maintain enough distance to be able to tell it' [ibid.: 6].
12. Stephen Morse's review of the two books in *Public Health Reports* criticized Preston's work for being 'written like a movie script with overly dramatic, if not somewhat inaccurate, descriptions of how people die of Ebola virus infection', and identified Garrett's as the 'deeper and more substantive discussion' [Morse (1995)].
13. The emerging diseases worldview is examined more comprehensively in my doctoral dissertation: King (2001).
14. Other reports citing and reiterating the recommendations of *America's Vital Interest* include Noah & Fidas (2000), CDC & ATSDR (2000), CDC (2001), and Moodie & Taylor (2000).
15. I thank Arthur Kleinman for directing me to this report.
16. Among the minority of critical voices engaging in the public conversation regarding emerging diseases, see: King (2001); Farmer (1999): 37–58; and Tomes (2000).
17. There have to date been no reported symptomatic cases of Ebola haemorrhagic fever among humans in the United States. A 1989 outbreak at a primate quarantine unit in Reston, Virginia, resulted in four subclinical infections. Between 1999 and 2001, there were 149 confirmed cases of West Nile virus human illness in the United States, including 18 deaths. During 2002, the virus appeared to have spread to a number of new areas, and the number of cases jumped. As this paper was submitted, the CDC reported 1852 confirmed cases and 89 deaths in 32 states and the District of Columbia. Data available at: <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>
18. Mary Douglas' analysis is still pertinent, even if the object of horror is undergoing a process of reconfiguration: see Douglas (1994 [1966]).
19. As one (unpaginated) study commissioned by the Council on Foreign Relations noted, 'world health improvements strengthen the global system, and this in turn benefits the United States as the dominant power and main supporter of that system': Kassalow (2001): n.p.
20. For more on the centrality of surveillance in modern biomedicine, see Armstrong (1995). On surveillance more generally, see Lyon (1994) and Bogard (1996).
21. As another report [Moodie & Taylor (2000): 54–55] argued:

Pharmaceutical companies cannot be blamed for their current priorities. They do what businesses tend to do – responding to the market. . . . The legitimate interests of the corporate community must be sustained while the health challenges in poor and potentially unstable countries are addressed more effectively . . . there is more than enough creativity to bridge the needs of the poor, the requirements of corporate actors, and opportunities created by the scientific community.
22. This IOM report, *Orphans and Incentives* [Harrison & Lederberg (1997)], is the first in a series of reports on workshops conducted by the IOM's Forum on Emerging Infections, and outlines the major issues facing attempts at collaboration between the public and private sectors. The participants in this particular workshop included representatives from American academic institutions (6), various branches of the US

- Federal Government (5), local US health departments (2), American and European pharmaceutical companies (9), and the Pharmaceutical Research and Manufacturers of America (PhRMA).
23. According to one 1996 estimate, development of a single new drug required an average of 15 years and \$359–500 million [Harrison & Lederberg (1997): 24–25].
 24. For an excellent early version of a study that illustrates the complex nature of the relationship between biomedical and ‘traditional’ healing systems, see Janzen (1978).
 25. Meeting in Alma-Ata in 1978, the WHO called for ‘the attainment by all peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life’, *via* social equity and the universal provision of basic health services. The full text of the Declaration is available at <http://www.who.int/hpr/archive/docs/almaata.html>
 26. In a discussion of commoditization as a universalizing process, Igor Kopytoff argues that there is ‘a drive inherent in every exchange system toward optimum commoditization – the drive to extend the fundamentally seductive idea of exchange to as many items as the existing exchange technology will allow’ [Kopytoff (1986): 72].
 27. As Simon During has suggested, globalization and postcolonialism are distinguished by the differing emphases on time and space: the former stresses ‘de-historicization’, in which metanarratives are rejected in favour of ‘non-modern’ relations to the past and future; while the latter emphasizes ‘de-territorialization’, in which geographical determinism is rejected in favour of an analysis of the fragmented but unified world system of exchanges. Focusing on the latter thus allows us to look at spaces of exchange rather than contests over temporality – to analyse less in terms of ‘how some have been granted [or, we might add, rejected] full access to modernity and others (the poorest and least powerful) have been “othered” and primitivized than in terms of how distance has been reduced to form a global system with a shared economy, a shared set of technologies and an increasingly fluid, accessible and exchangeable repertoire of cultural modes’ [During (1998): 37].
 28. This is part of a larger debate on the utility of binary oppositions and grand narratives within postcolonial theory discussed most clearly in Hall (1996).
 29. In this respect, I agree with Warwick Anderson’s plea that ‘we need to recognize that the basic language of Western medicine, with its claims to universalism and modernity, has always used, as it still does, the vocabulary of empire’ [Anderson (1998): 529].
 30. As one report succinctly argued, ‘world health improvements strengthen the global system, and this in turn benefits the United States as the dominant power and main supporter of that system’ [Kassalow (2001): n.p.].

References

- Altman (1989)** Lawrence K. Altman, ‘Fearful of Outbreaks, Doctors Pay Heed to Emerging Viruses’, *The New York Times* (9 May): C3.
- Anderson (1995)** Warwick Anderson, ‘Excremental Colonialism: Public Health and the Poetics of Pollution’, *Critical Inquiry* 21 (Spring): 640–69.
- Anderson (1998)** Warwick Anderson, ‘Where Is the Postcolonial History of Medicine?’, *Bulletin of the History of Medicine* 72: 522–30.
- Anderson (2000)** Warwick Anderson, ‘The Third-World Body’, in Roger Cooter and John Pickstone (ed.), *Medicine in the Twentieth Century* (Amsterdam: Harwood Academic): 235–45.
- Anderson (2002)** Warwick Anderson, ‘Going Through the Motions: American Public Health and Colonial Mimicry’, *American Literary History* (forthcoming).
- Armstrong (1995)** David Armstrong, ‘The Rise of Surveillance Medicine’, *Sociology of Health and Illness* 17/3 (March): 393–404.
- Arnold (1988a)** David Arnold, ‘Introduction: Disease, Medicine, and Empire’, in Arnold (1988b): 1–26.
- Arnold (1988b)** David Arnold (ed.), *Imperial Medicine and Indigenous Societies* (Manchester, UK: Manchester University Press).

- Arnold (1993)** David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press).
- Bogard (1996)** William Bogard, *The Simulation of Surveillance: Hypercontrol in Telematic Societies* (London & Cambridge: Cambridge University Press).
- CDC (1994)** Centers for Disease Control and Prevention, 'Addressing Emerging Disease Threats: A Prevention Strategy for the United States' (Atlanta, GA: US Department of Health & Human Services, Public Health Service). Available at: http://www.cdc.gov/ncidod/publications/eid_plan/default.htm
- CDC (2001)** Centers for Disease Control and Prevention, 'Protecting the Nation's Health in an Era of Globalization: CDC's Global Infectious Disease Strategy' (Atlanta, GA: US Department of Health & Human Services, Public Health Service, CDC). Available at: <http://www.cdc.gov/globalidplan>
- CDC & ATSDR (2000)** Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry, 'Working with Partners to Improve Global Health: A Strategy for CDC and ATSDR' (Atlanta, GA: US Department of Health & Human Services, Public Health Service, CDC & ATSDR). Available at: <http://www.cdc.gov/ogh/>
- Chakrabarty (1992)** Dipesh Chakrabarty, 'Postcoloniality and the Artifice of History: Who Speaks for "Indian" Pasts?', *Representations* 37 (Winter): 1-26.
- Cipolla (1981)** Carlo Cipolla, *Fighting the Plague in Seventeenth-Century Italy* (Madison: University of Wisconsin Press).
- CISSET (1995)** Committee on International Science, Engineering and Technology, *Global Microbial Threats in the 1990s: Report of the Committee on International Science, Engineering and Technology's Working Group on Emerging and Reemerging Infectious Diseases* (Washington, DC: National Science & Technology Council). Available at: <http://www.ostp.gov/CISSET/html/ciset.html>
- Coleman (1987)** William Coleman, *Yellow Fever in the North: The Methods of Early Epidemiology* (Madison: University of Wisconsin Press).
- Comaroff & Comaroff (1992)** John Comaroff and Jean Comaroff, *Ethnography and the Historical Imagination* (Boulder, CO: Westview Press).
- Cunningham & Andrews (1997)** Andrew Cunningham and Bridie Andrews, *Western Medicine as Contested Knowledge* (Manchester, UK: Manchester University Press).
- Dirlik (1994)** Arif Dirlik, 'The Postcolonial Aura: Third World Criticism in the Age of Global Capitalism', *Critical Inquiry* 20 (Winter): 328-56.
- Douglas (1994 [1966])** Mary Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo* (London: Routledge).
- During (1998)** Simon During, 'Postcolonialism and Globalization: A Dialectical Relation after All?', *Postcolonial Studies* 1/1 (April): 31-47.
- Escobar (1988)** Arturo Escobar, 'Power and Visibility: Development and the Invention and Management of the Third World', *Cultural Anthropology* 4: 428-43.
- Etheridge (1992)** Elizabeth W. Etheridge, *Sentinel for Health: A History of the Centers for Disease Control* (Berkeley: University of California Press).
- Farmer (1999)** Paul Farmer, *Infections and Inequalities: The Modern Plagues* (Berkeley: University of California Press).
- Fee (1994)** Elizabeth Fee, 'Public Health and the State: The United States', in Porter (1994b): 224-75.
- Garrett (1989)** Laurie Garrett, 'Emerging Viruses, Growing Concerns,' *Newsday* (30 May): 1.
- Garrett (1990a)** Laurie Garrett, 'Monkey-Import Plans Challenged', *Newsday* (24 March): 4.
- Garrett (1990b)** Laurie Garrett, '5 People Infected by Monkey Virus', *Newsday* (6 April): 6.
- Garrett (1994)** Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World out of Balance* (New York: Farrar, Straus & Giroux).
- Garrett (1996)** Laurie Garrett, 'The Return of Infectious Disease', *Foreign Affairs* (January/February): 66-79.

- Gellman (2000)** Barton Gellman, 'AIDS Is Declared Threat to Security', *The Washington Post* (30 April): A1.
- Giddens (1990)** Anthony Giddens, *The Consequences of Modernity* (Stanford, CA: Stanford University Press).
- Hall (1996)** Stuart Hall, 'When Was "the Post-Colonial"?' Thinking at the Limit', in Iain Chambers and Lidia Curti (eds), *The Post-Colonial Question: Common Skies, Divided Horizons* (London: Routledge): 242–60.
- Hardt & Negri (2000)** Michael Hardt and Antonio Negri, *Empire* (Cambridge, MA: Harvard University Press).
- Harrison & Lederberg (1997)** Polly F. Harrison and Joshua Lederberg, *Orphans and Incentives: Developing Technologies to Address Emerging Infections* (Washington, DC: National Academy Press).
- Henig (1993)** Robin Marantz Henig, *A Dancing Matrix: How Science Confronts Emerging Viruses* (New York: Vintage Books).
- Ileto (1988)** Reynaldo C. Ileto, 'Cholera and the Origins of the American Sanitary Order in the Philippines', in Arnold (1988b): 125–48.
- IOM (1997)** Institute of Medicine Board on International Health, *America's Vital Interest in Global Health: Protecting Our People, Enhancing Our Economy, and Advancing Our International Interests* (Washington, DC: National Academy Press).
- Janzen (1978)** John Janzen, *The Quest for Therapy in Lower Zaire* (Berkeley: University of California Press).
- Kassalow (2001)** Jordan S. Kassalow, 'Why Health Is Important to US Foreign Policy' (Washington, DC: Council on Foreign Relations and Milbank Memorial Fund), available at http://www.cfr.org/public/pubs/Kassalow_Health_Paper.html
- King (2001)** Nicholas Benjamin King, *Infectious Disease in a World of Goods* (unpublished PhD thesis, Department of the History of Science, Harvard University).
- Kinsella (1989)** James Kinsella, *Covering the Plague: Aids and the American Media* (New Brunswick, NJ: Rutgers University Press).
- Kopytoff (1986)** Igor Kopytoff, 'The Cultural Biography of Things: Commoditization as Process', in Arjun Appadurai (ed.), *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press): 64–91.
- Krause (1993)** Richard M. Krause, 'Foreword', in Morse (1993c): xvii–xix.
- Kraut (1994)** Alan M. Kraut, *Silent Travelers: Germs, Genes, and the 'Immigrant Menace'* (Baltimore, MD: Johns Hopkins University Press).
- Latour (1993)** Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press).
- Leavitt (1996)** Judith Walzer Leavitt, *Typhoid Mary: Captive to the Public's Health* (Boston, MA: Beacon Press).
- Lederberg (1988)** Joshua Lederberg, 'Medical Science, Infectious Disease, and the Unity of Humankind', *Journal of the American Medical Association* 260 (5 August): 684–85.
- Lederberg (1993)** Joshua Lederberg, 'Viruses and Humankind: Intracellular Symbiosis and Evolutionary Competition', in Morse (1993c): 3–9.
- Lederberg (1996)** Joshua Lederberg, 'Infection Emergent', *Journal of the American Medical Association* 275 (17 January): 243–45.
- Lederberg, Shope & Oaks (1992)** Joshua Lederberg, Robert E. Shope and Stanley C. Oaks, Jr, *Emerging Infections: Microbial Threats to Health in the United States* (Washington, DC: National Academy Press).
- Lyon (1994)** David Lyon, *The Electronic Eye: The Rise of Surveillance Society* (Minneapolis: University of Minnesota Press).
- Lions (1992)** Maryinez Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire* (Cambridge: Cambridge University Press).
- McCarthy (2001)** Mike McCarthy, 'James Hughes – Director of the National Center for Infectious Diseases', *The Lancet Infectious Diseases* 0/1 (April): 29. Available at: <http://infection.thelancet.com>
- Maier (2000)** Charles S. Maier, 'Consigning the Twentieth Century to History: Alternative Narratives for the Modern Era', *American Historical Review* 105/3 (March): 807–31.

- Markel (1997)** Howard Markel, *Quarantine! East European Jewish Immigrants and the New York City Epidemics of 1892* (Baltimore, MD: Johns Hopkins University Press).
- Moodie & Taylor (2000)** Michael Moodie and William J. Taylor, Jr, 'Contagion and Conflict: Health as a Global Security Challenge' (Washington, DC: Chemical and Biological Arms Control Institute & Center for Strategic and International Studies International Security Program). Available at: <http://www.cbaci.org/PDFContagionConflictFullReport.pdf>
- Moore-Gilbert (1998)** Bart Moore-Gilbert, 'Postcolonialism: Between Nationalitarianism and Globalisation? A Response to Simon During', *Postcolonial Studies* 1/1 (April): 49–65.
- Morrison & Morrison (1999)** Philip Morrison and Phylis Morrison, '100 or So Books That Shaped a Century of Science', *American Scientist* 87 (November–December): 543–53.
- Morse (1990)** Stephen S. Morse, 'Regulating Viral Traffic', *Issues in Science and Technology* 7 (Fall): 81–84.
- Morse (1991)** Stephen S. Morse, 'Emerging Viruses: Defining the Rules for Viral Traffic', *Perspectives in Biology and Medicine* 34/3 (Spring): 387–409.
- Morse (1992)** Stephen S. Morse, 'Global Microbial Traffic and the Interchange of Disease', *American Journal of Public Health* 82/10 (October): 1326–27.
- Morse (1993a)** Stephen S. Morse, 'Preface', in Morse (1993c): vii–xi.
- Morse (1993b)** Stephen S. Morse, 'Examining the Origins of Emerging Viruses', in Morse (1993c): 10–28.
- Morse (1993c)** Stephen S. Morse (ed.), *Emerging Viruses* (New York: Oxford University Press).
- Morse (1995)** Stephen S. Morse, 'The Year 2000: Only a Plane Flight Away from Disaster?', *Public Health Reports* 110/2 (February): 223–25.
- Noah & Fidas (2000)** Don Noah and George Fidas, 'The Global Infectious Disease Threat and Its Implications for the United States' (Washington, DC: US Department of State & National Security Council, National Intelligence Council, January), unpaginated. Available at: <http://www.cia.gov/cia/publications/nie/report/nie99-17d.html>
- Packard (1989)** Randall M. Packard, *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* (Berkeley: University of California Press).
- Porter (1994a)** Dorothy Porter, 'Introduction', in Porter (1994b): 1–44.
- Porter (1994b)** Dorothy Porter (ed.), *The History of Public Health and the Modern State* (Amsterdam & Atlanta, GA: Editions Rodopi B.V.).
- Preston (1992)** Richard Preston, 'Crisis in the Hot Zone', *The New Yorker* (26 October): 58–81.
- Preston (1994)** Richard Preston, *The Hot Zone* (New York: Random House).
- Roemer (1994)** Milton I. Roemer, 'Internationalism in Medicine and Public Health', in Porter (1994b): 403–23.
- Sassen (1991)** Saskia Sassen, *The Global City: New York, London, Tokyo* (Princeton, NJ: Princeton University Press).
- Tomes (2000)** Nancy Tomes, 'The Making of a Germ Panic, Then and Now', *American Journal of Public Health* 90/2 (February): 191–98.
- WHO (1996)** World Health Organization, 'Emerging and Other Communicable Diseases: Strategic Plan 1996–2000' (Geneva: WHO): 1–11. Available at: <http://www.wgo.int/emc-documents/emc/whoemc961c.html>
- WHO (2000)** World Health Organization, 'A Framework for Global Outbreak Alert and Response' (Geneva: WHO): 1–16. Available at: <http://www.who.int/emc-documents/surveillance/whocdscsr2002c.html>
- World Bank (1993)** The World Bank, *World Development Report 1993: Investing in Health* (New York: Oxford University Press).

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